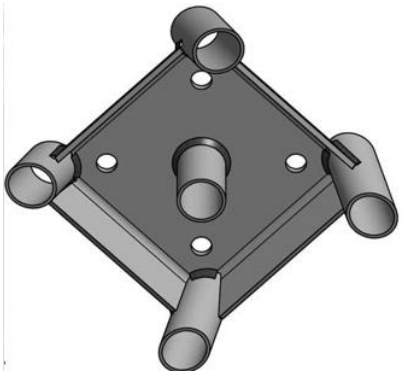
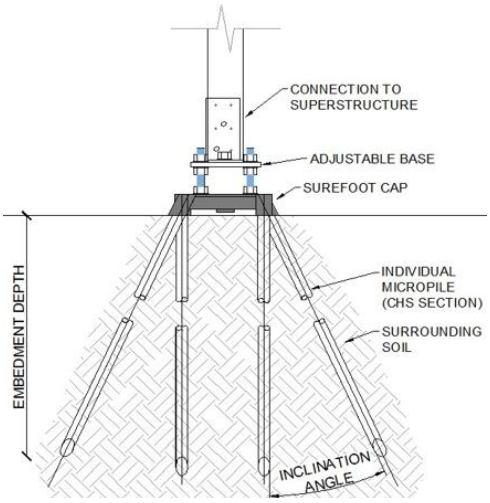
North Carolina Department of Transportation
Transportation Program Management Unit - Value Management
Innovative Technologies and Products Awareness Report
June 28, 2018

PRODUCT HIGHLIGHT – Surefoot Pile Cap



Surefoot Pile Cap

The Surefoot Pile Cap is a steel pile cap that can be placed either on or above the ground. The purpose of this product is to provide footings for structures such as bridges or sign supports. Steel micropiles (small diameter piles) are driven into each of the holes at various depths typically using a jackhammer. These lightweight caps can be manually handled by a single operator and completed in approximately 10 to 30 minutes. There are multiple variations of the cap allowing 3 to 16 micropiles to accommodate differing loads and soil conditions. For less accommodating sandy soil types, grout can be added for increased stability.



Cross Section view of cap in soil

Surefoot Pile Caps provide suitable support without having to excavate, drill, or use any concrete. These are especially beneficial in areas where heavy machinery may have limited access such as roadways with limited load capacity or barrier islands. They can also provide an overall cost savings due to the quick and easy installation process. This product was researched and tested by the State Government of Victoria, Australia using ASTM-D1143 (Standard test method for piles under static axial compression load). They have concluded that Surefoot Pile Caps can be used as a cost-effective alternative of traditional footing. The product is currently under evaluation and listed on the APL as NP18-8084. More information can be found at https://surefootfootings.com.au/ .

PRODUCT INNOVATION – Radio Frequency Identification Tags

The Materials and Tests Unit has implemented a new product cataloging and tracking process involving Radio Frequency Identification (RFID) tags. RFID is a scan code method that assigns a serial number to that unique scan code. Materials and Tests contracted Idencia to have a coding system set up for products that are inspected at a producer using a scanner, connected to a tablet or smart phone. The tag is attached to the product so that it can be scanned and identified when it arrives on the construction project. When the tag is scanned, the scanner is connected to a tablet or smart phone. Then, the Idencia App enters the product information into DOT's HiCAMS product tracking program. This allows project inspectors or producers to immediately have access to the details of the product. The scanning process reduces paperwork, travel time for inspectors, transcribing errors, and helps prevent unsatisfactory products from being used on projects.

RFID Scanner and label prior to being attached to product.

The RFID tags are also beneficial to the production plants. They can help keep track of inventory as well as the status of each product that has been scanned. The information attached can include dimensions, material used, test data of the materials, if the product had been inspected and approved, bill of lading, and a photograph of the product. This is required for use by producers of precast and prestressed concrete materials. Eventually, pipe, steel, and all sampled materials to be tested by the DOT testing labs will be included. The scanners cost approximately $425 per unit, while each tag is approximately $0.85.

More information can be found at http://www.idencia.com/ and http://www.rfidjournal.com/articles/view?12349/3 .